

HEATING/VENTILATING SYMBOL LIST DESCRIPTION — GS —— | GLYCOL WATER SUPPLY --- GR--- GLYCOL WATER RETURN — HWS — HOT WATER SUPPLY ---HWR---- HOT WATER RETURN CHILLED WATER SUPPLY ·-- CHR --- CHILLED WATER RETURN — D — DRAIN LINE REFRIGERANT LIQUID LINE --- RS --- | REFRIGERANT SUCTION LINE —— MU —— | MAKE UP WATER — B — BRINE SUPPLY --- BR --- BRINE RETURN — A — COMPRESSED AIR PIPING ——HPS—— | HIGH PRESSURE STEAM SUPPLY PIPING -----MPS----- MEDIUM PRESSURE STEAM SUPPLY PIPING ——LPS—— LOW PRESSURE STEAM SUPPLY PIPING ---HPR--- HIGH PRESSURE STEAM RETURN PIPING ---MPR--- MEDIUM PRESSURE STEAM RETURN PIPING ---LPR--- LOW PRESSURE STEAM RETURN PIPING ——CPD—— | CONDENSATE PUMP DISCHARGE PIPING —— FW —— | FEED WATER PUMP PIPING ——IĎ⊢— | BUTTERFLY VALVE —├── │ GATE VALVE — CHECK VALVE ——⊗— | CALIBRATED BALANCE VALVE —──────── | AUTOMATIC TWO-WAY CONTROL VALVE (ELECTRIC) —₩— | AUTOMATIC TWO-WAY CONTROL VALVE (PNEUMATIC) AUTOMATIC THREE-WAY CONTROL VALVE (PNEUMATIC) —D≪I— | GLOBE VALVE —IÒI— | BALL VALVE RELIEF VALVE PIPE ANCHOR H THERMOMETER $-\boxtimes$ STEAM TRAP PRESSURE GAUGE MANUAL AIR VENT ELBOW TURNED UP GH ELBOW TURNED DOWN TEE - BOTTOM OUTLET — III SCREWED UNION ——— | FLANGED UNION PRESSURE REDUCING VALVE CONCENTRIC REDUCER ____ ECCENTRIC REDUCER ─── | STRAINER GAGE COCK PIPE GUIDE VACUUM BREAKER - <u>-</u> FLOW MEASURING DEVICE EXISTING TO BE REMOVED FLEXIBLE PUMP OR PIPE CONNECTION SUPPLY AIR DUCT (TOWARD) SUPPLY AIR DUCT (AWAY) RETURN OR OUTDOOR AIR DUCT (TOWARD) RETURN OR OUTDOOR AIR DUCT (AWAY) FIRST NUMBER IS SIDE SHOWN - 24/12 SUPPLY SECOND NUMBER IS SIDE NOT SHOWN RETURN/EXHAUST ARROWS INDICATE DIRECTION OF FLOW TURNING VANES MANUAL VOLUME DAMPER BD BACKDRAFT DAMPER → MOTORIZED DAMPER FIRE DAMPER / SMOKE DAMPER FLEXIBLE DUCT CONNECTION TX | FLEXIBLE DUCT ACCESS PANEL INCLINED RISE (IN DIRECTION OF AIR FLOW) INCLINED DROP (IN DIRECTION OF AIR FLOW) △ P PRESSURE DROP ROOM TEMPERATURE SENSOR ROOM PRESSURE SENSOR HUMIDISTAT THERMOSTAT NEW CONNECTION TO EXISTING

MECHANICAL ABBREVIATIONS

A/E AF	ARCHITECT/ENGINEER	HT	LICATING TRADE
		пі	HEATING TRADE
	AIR FOIL	HWP	HOT WATER PUMP
AFB	AIR FOIL BLADE	HWR	HOT WATER RETURN
AFMS	- AIR FLOW MEASURING STATION	HWS	HOT WATER SUPPLY
AHU	- AIR HANDLING UNIT	KW	KILOWATT
AD	- ACCESS DOOR	LAT LD	LEAVING AIR TEMPERATURE LINEAR DIFFUSER
AL	- ALUMINUM	LPR	LOW PRESSURE RETURN (CONDENSATE)
AP BB	ACCESS PANEL BASEBOARD	LPS	- LOW PRESSURE STEAM
BC	- BOOSTER COIL	LRA	- LOCKED ROTOR AMPS
BDD	BACKDRAFT DAMPER	LWT	LEAVING WATER TEMPERATURE
BHP	BRAKE HORSEPOWER	М	MOTOR OPERATED DAMPER
BTU	BRITISH THERMAL UNIT	MA	- MIXED AIR
BWI	BACKWARD INCLINE	MBH	- 1000 BRITISH THERMAL UNITS
CC	COOLING COIL	MIN	- MINIMUM
CD	CEILING DIFFUSER	MSO	- 50% MINIMUM SHUT OFF
CFM	CUBIC FEET PER MINUTE	NIC	NOT IN CONTRACT
CONV	CONVECTOR	NTS	- NOT TO SCALE
CUH	CABINET UNIT HEATER	OA	OUTSIDE AIR
CV	CONSTANT VOLUME	P	PUMP
CW		PC	PUMPED CONDENSATE
CWP	COLD WATER CHILLED WATER PUMP	PD	PUMP DISCHARGE
CWR	CHILLED WATER RETURN	PH	PER HOUR
CWS	CHILLED WATER SUPPLY	PRESS	PRESSURE
D	DRAIN	PSI	POUNDS PER SQUARE INCH
D&T	DRIP & TRAP ASSEMBLY	PSIG	POUNDS PER SQUARE INCH (GAUGE)
DA	DISCHARGE AIR	PSIA	POUNDS PER SQUARE INCH (ABSOLUTE)
DB	DRY BULB	PT	PLUMBING TRADE
DCO	DOOR CUTOFF	RA	RETURN AIR
DG	DOOR GRILLE	RC	REHEAT COIL
DN	DOWN	RF	RETURN FAN
EXH	EXHAUST	RG	RETURN GRILLE
EA	- EXHAUST AIR	RH	RELATIVE HUMIDITY
EAT	ENTERING AIR TEMPERATURE	RLA	- RUNNING LOAD AMPS
EG	EXHAUST GRILLE	RPM	REVOLUTIONS PER MINUTE
ER	- EXHAUST REGISTER	SA SF	SUPPLY AIRSUPPLY FAN
EF	EXHAUST FAN	SG	— SUPPLY GRILLE
ET	ELECTRICAL TRADE	SM	SHEET METAL
ETR	- EXISTING TO REMAIN	SO	- 100% SHUT OFF
EWT	- ENTERING WATER TEMPERATURE	SR	- SUPPLY REGISTER
F	FURNACE	SS	STAINLESS STEEL
°F	DEGREES FAHRENHEIT		
FA	FREE AREA	SUH	- STEAM UNIT HEATER
F&T	FLOAT & THERMOSTATIC TRAP	T	- THERMOSTAT
FC	FORWARD CURVED	TA TAC	TRANSFER AIR TERMINAL AIR CABINET
FCU	FAN COIL UNIT	TCP	- TEMPERATURE CONTROL PANEL
FD	FLOOR DRAIN	TCT	- TEMPERATURE CONTROL TRADE
FLA	FULL LOAD AMPS	TCV	- TEMPERATURE CONTROL VALVE
FLEX	FLEXIBLE	TG	- TRANSFER GRILLE
FMD	FLOW MEASURING DEVICE	ТО	- TEST OPENING
FPM	FEET PER MINUTE	UH	— UNIT HEATER
FPS	FEET PER SECOND	UNO	- UNLESS NOTED OTHERWISE
FSD	FIRE/SMOKE DAMPER	UV	UNIT VENTILATOR
G	GAS	VA	- VANE AXIAL
GPM GT	GALLONS PER MINUTE GENERAL TRADE	VDT	- VERTICAL DRAW THROUGH
		VFD	VARIABLE FREQUENCY DRIVE
H	HUMIDIFIER	VVB	- VARIABLE VOLUME BOX
HC	HEATING COIL	VVBR	- VARIABLE VOLUME BOX W/ REHEAT
HD HDT	HUB DRAIN	WB	- WET BULB
HDT	HORIZONTAL DRAW THROUGH	WF	- WALL FIN
HE HE	HEAT EXCHANGER	WG	- WATER GAUGE
HP JDD	HORSEPOWER	WPD	- WATER PRESSURE DROP
HPR	HIGH PRESSURE CONDENSATE RETURN HIGH PRESSURE STEAM	WTD	- WATER TEMPERATURE DROP
HPS			

GENERAL DEMOLITION & NEW WORK NOTES (ALL DRAWINGS): THIS CONTRACTOR SHALL VERIFY THE EXISTING CONDITIONS AT THE PROJECT SITE BEFORE SUBMITTING COST PROPOSAL. CONTRACTOR IS ADVISED THAT ALL LOCATIONS ARE APPROXIMATE. AN ATTEMPT HAS BEEN MADE TO SHOW THE APPROXIMATE LOCATION OF ALL STRUCTURE, EQUIPMENT, PIPING, FIXTURES, DUCTWORK, AND OUTLETS. THIS CONTRACTOR SHALL VISIT THE SITE TO VERIFY COMPONENTS, LOCATIONS AND SIZES SHOWN OR NOT SHOWN. ALL COMPONENTS NEED TO BE REMOVED IN THE DEMOLITION AREA UNLESS NOTED ON THE DRAWINGS. SERVICES TO EXISTING BUILDING SHALL BE KEPT ON CONTINUOUS OPERATION INCLUDING DOMESTIC WATER, SANITARY, STORM, STEAM, HEATING, HOT WATER, HVAC SUPPLY, RETURN & EXHAUST, ETC. ANY ABSOLUTELY NECESSARY INTERRUPTION OF THESE SERVICES TO ACCOMPLISH PROJECT CONSTRUCTION SHALL BE ARRANGED WITH THE RESIDENT ENGINEER THROUGH THE GENERAL CONTRACTOR, A MINIMUM OF TWO (2) WEEKS IN ADVANCE. TEMPORARY SERVICES SHALL BE FURNISHED AND INSTALLED WHERE NECESSARY TO ACCOMPLISH THIS PURPOSE. TEMPORARIES SHALL BE REMOVED ONLY AFTER NEW PERMANENT SERVICES ARE INSTALLED AND FULLY OPERATIONAL. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR DEMOLITION, REMOVAL, CAPPING, STORING, ABANDONING, DISCONNECTING, RELOCATING AND RECONNECTION OF EXISTING EQUIPMENT AND MATERIAL. ALL CUTTING, PATCHING, REPAIRING, REPLACEMENT AND REFINISHING SHALL MATCH THE EXISTING CONSTRUCTION AS NEARLY AS POSSIBLE. EXCEPT WHERE OTHERWISE SHOWN OR NOTED ON DRAWING - "RELOCATED" OR HEREINAFTER NOTED, ALL EXISTING EQUIPMENT AND MATERIAL IN AREAS TO BE REMODELED/ALTERED SHALL BE REMOVED WHERE THEY INTERFERE WITH PROPOSED NEW CONSTRUCTION &/OR INTERFERE W/PROPOSED USAGE OF SPACE BY OWNER AS FOLLOWS: (A) REMOVE ANY PIPES PROTRUDING ABOVE FINISHED FLOOR OR THROUGH WALL AND CAP AND FINISH OVER WITH MATERIAL (B) REMOVE ALL HEATING HOT WATER, HVAC SUPPLY, RETURN & EXHAUST AS NOTED. CAP AT NEAREST ACTIVE MAIN. SUPPLY & RETURN MAINS TO BE VALVED & CAPPED. (C) IN REMODELED/ALTERED AREAS ANY PIPING OR DUCTWORK PASSING THROUGH THE REMODELED AREAS TO SERVE (OR BEING SERVED FROM EXISTING ADJACENT, REMOTE, OR SURROUNDING AREA THAT ARE TO REMAIN) SHALL BE RETAINED AND KEPT OPERATIONAL AND SHALL BE REROUTED IN ALL CASES WHERE THEY INTERFERE WITH ANY NEW WORK OR USAGE TO BE ACCOMPLISHED IN THE REMODELED AREA. (D) PENETRATIONS THROUGH EXISTING WALLS AND FLOORS FORMERLY OCCUPIED BY REMOVED PIPING SHALL BE PATCHED TO MATCH EXISTING CONSTRUCTION. THESE DRAWINGS ARE NECESSARILY DIAGRAMMATIC IN NATURE. NOT ALL FITTINGS, OFFSETS, VENTS, OR DRAINS ARE SHOWN. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING AND INCLUDE ALL FITTINGS, OFFSETS, VENTS, AND DRAINS AS REQUIRED TO PROVIDE A COMPLETE AND FUNCTIONING SYSTEM. ALL PIPING AND DUCTS IN FINISHED ROOMS OR SPACES SHALL BE CONCEALED IN A FURRED CHASE OR ABOVE THE HARD THE FIRST FIGURE OF DUCT SIZE INDICATES DIMENSION OF FACE SHOWN OR INDICATED. DUCT SIZES ARE NET INSIDE ACCESS PANELS IN HARD SUSPENDED CEILINGS ARE REQUIRED FOR ALL VALVES, DAMPERS, CLEANOUTS, CONTROLS, ETC. ACCESS PANELS SHALL BE FURNISHED AND INSTALLED UNDER THE ARCHITECTURAL SPECIFICATIONS. TOTAL STATIC PRESSURE NOTED IN THE SCHEDULES INCLUDES DUCT SYSTEM, TERMINAL UNITS, FILTERS, COILS, ETC. FOR TYPICAL WATER PIPING CONNECTIONS TO EQUIPMENT, SEE STANDARD EQUIPMENT DETAILS. 12. DIFFUSER, REGISTER AND GRILLE SIZES SHOWN ON FLOOR PLANS ARE NECK SIZES. WATER PIPE CONNECTIONS TO AIR HEATING AND COOLING COILS SHALL BE MADE TO PROVIDE COUNTER FLOW BETWEEN WATER 14. COORDINATE EXACT LOCATION OF CEILING DIFFUSERS, REGISTERS, AND GRILLES. ALL HWS & HWR PIPING TO TERMINAL UNITS SHALL BE 3/4", UNLESS OTHERWISE NOTED. PROVIDE MANUAL AIR VENTS ON ALL RISERS & CHANGES IN PIPE ELEVATIONS. PROVIDE ALL LABOR, FITTINGS, INSTALLATION AND PIPING NECESSARY TO INSTALL PIPING. COORDINATE WITH OTHER TRADES.

ALL DUCT WORK PENETRATIONS THROUGH FIRE OR SMOKE RATED WALLS MUST MAINTAIN THE RATING OF THE WALL. FIRE

19. ALL SUPPLY AIR DIFFUSERS, RETURN AND EXHAUST GRILLES SHALL HAVE CONTROL DAMPERS IN THE DUCT RUNOUT.

U.L. 1 1/2 HOUR FIRE PROTECTION RATING.

DAMPERS ARE REQ'D WHERE DUCTS PENETRATE WALLS HAVING A FIRE RESISTANCE RATING OF 1 HOUR OR 2 HOURS. FIRE DAMPERS USED FOR PROTECTION OF WALLS OR FLOORS W/ FIRE RESISTANCE RATINGS OF LESS THAN 3 HOURS SHALL HAVE A

Date

Revisions:

VA FORM 08-6231, OCT 1978

Dept. of Veterans Affairs Medical Center 2500 Overlook Terrace Madison, WI, 53750







PROJECT LEADER/ARCHITECT:

ASHLAND, WI 211 6TH STREET WEST ASHLAND, WI, 54806 PHONE: (715) 682-6004 FAX: (715) 682-6025 933 N. MAYFAIR RD., SUITE 109 MILWAUKEE, WI, 53226 Drawing Title Mechanical Notes, Symbols and Abbreviations Approved: Project Director

Project Title Patient Entrance Canopy/ Mental Health Connecting Corridor Location

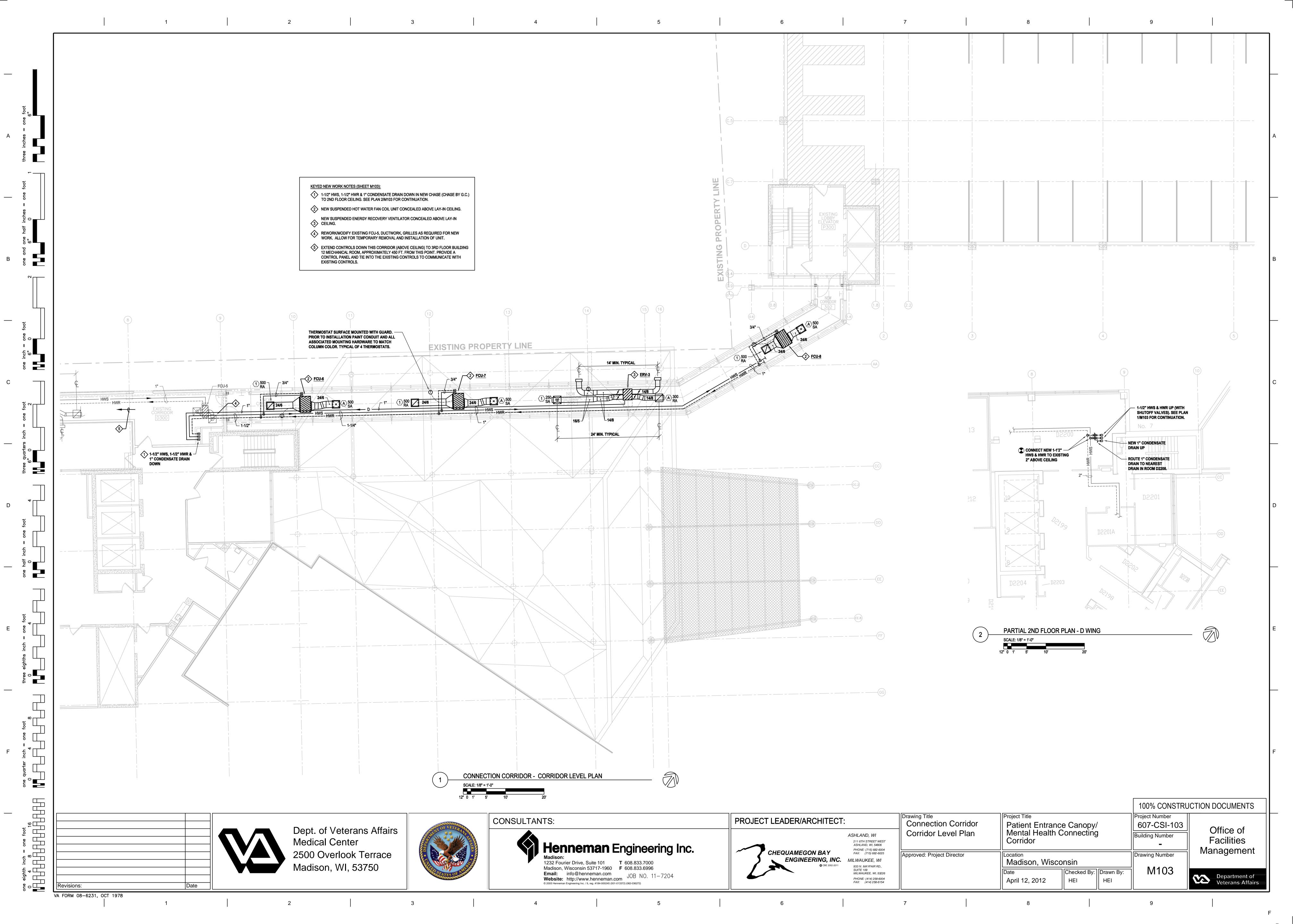
Project Number 607-CSI-103 Office of Building Number **Facilities** Management Drawing Number

100% CONSTRUCTION DOCUMENTS

Department Veterans Affairs

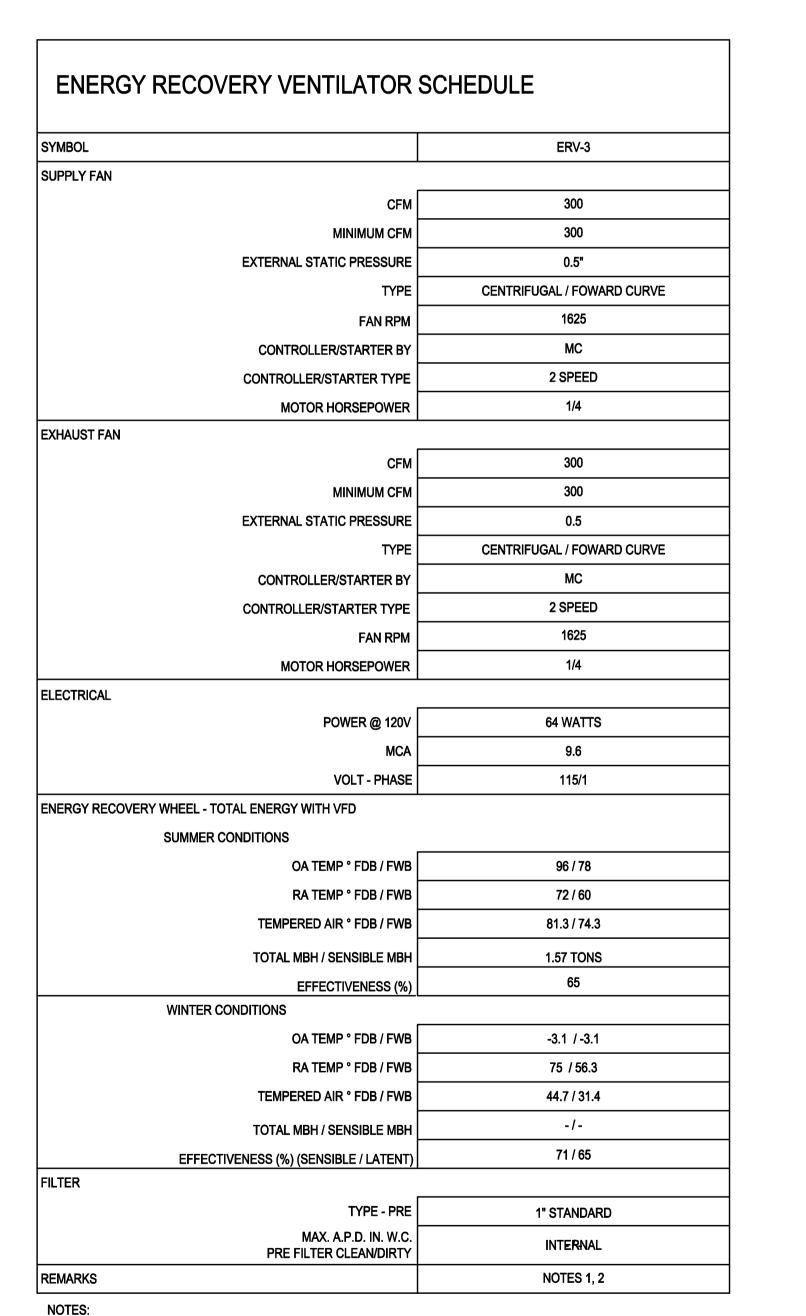
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Madison, Wisconsin Checked By: Drawn By: April 12, 2012 HEI HEI



FAN COIL UNIT SCHEDULE **FAN & MOTOR HEATING COIL** AIRFLOW (CFM) EAT/LAT (°F) | HTG CAP. (MBH) | EWT/LWT (°F) (IN.WG) (V/PH/HZ) 1, 2, 3, 4, 5 CONCEALED CORRIDOR 1/10 0.07 31 / 29 180 / 160 CONCEALED CORRIDOR 0.07 1/10 MED. 10 1, 2, 3, 4, 5 31 / 29 180 / 160 CORRIDOR CONCEALED 1. INCLUDE THE GRILLES AND COLLARS FOR SUPPLY AND RETURN AS INDICATED. 2. THE UNITS SHALL BE SUPPORTED WITH VIBRATION ISOLATORS. 3. THE UNITS SHALL INCLUDE A FLEXIBLE CONNECTION BETWEEN PIPE MAIN AND UNIT PIPING. 4. THE UNITS SHALL INCLUDE A THROW AWAY FILTER WITH ONE SET OF REPLACEMENT FILTERS. COORDINATE MOUNTING WITH SERVICE ACCESS REQUIREMENTS. 5. PROVIDE PREMIUM EFFICIENCY MOTORS. GRILLE AND DIFFUSER SCHEDULE MAx S.P. MAx NOISE LEVEL **NECK SIZE** THROW (FEET) AIR PATTERN DESCRIPTION MATERIAL REMARKS (WATER) SUPPLY AIR 10"Ø 24" x 24" 0.10 25 4 - 12 SQUARE DIFFUSER VAV ROUND 1,2,3,4,5,6 ALUMINUM 4-WAY LAY-IN 12"Ø or 15"x15" 24" X 24" 0.10 RETURN / EXHAUST / TRANSFER 24" X 24" 0.10 12" X 8" LOUVERED FACE GRILLE, 3/4" 1,2,3,4,5 ALUMINUM **45° DEFLECTION** 24" X 24" 0.10 25 12" X 10" SPACING SQUARE NECK 24" X 24" 18" X 10" 0.10 25 1. ALL GRILLES AND DIFFUSERS SHALL NOT EXCEED NOISE CRITERIA NC-25 (BASED ON 10dB ROOM ATTENUATION) AND A MAXIMUM OF 0.1 INCH WG STATIC PRESSURE DROP. 2. BORDER TYPES SHALL BE COMPATIBLE WITH CEILING TYPES WHERE AIR DEVICE IS LOCATED, REFER TO ARCHITECTURAL PLANS AND ALL OTHER TRADES. 3. SEE PLANS FOR LOCATION AND AIR QUANTITIES OF EACH DEVICE. 4. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

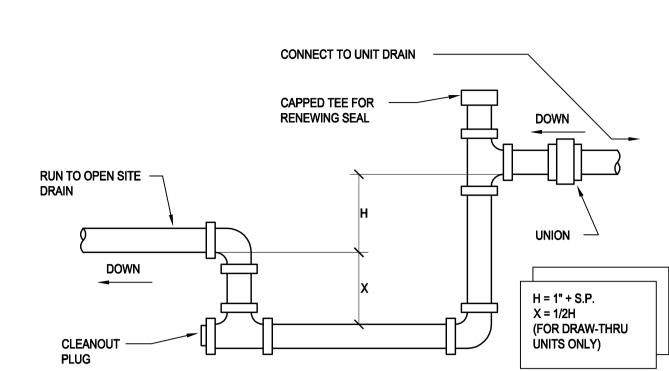
5. EACH SUPPLY, RETURN, EXHAUST DEVICE TO HAVE A DAMPER IN DUCT BRANCH TAKE-OFF. PRIOR APPROVAL REQUIRED BY ENGINEER TO USE OPPOSED BLADE DAMPER (OBD) IN AIR DEVICE.



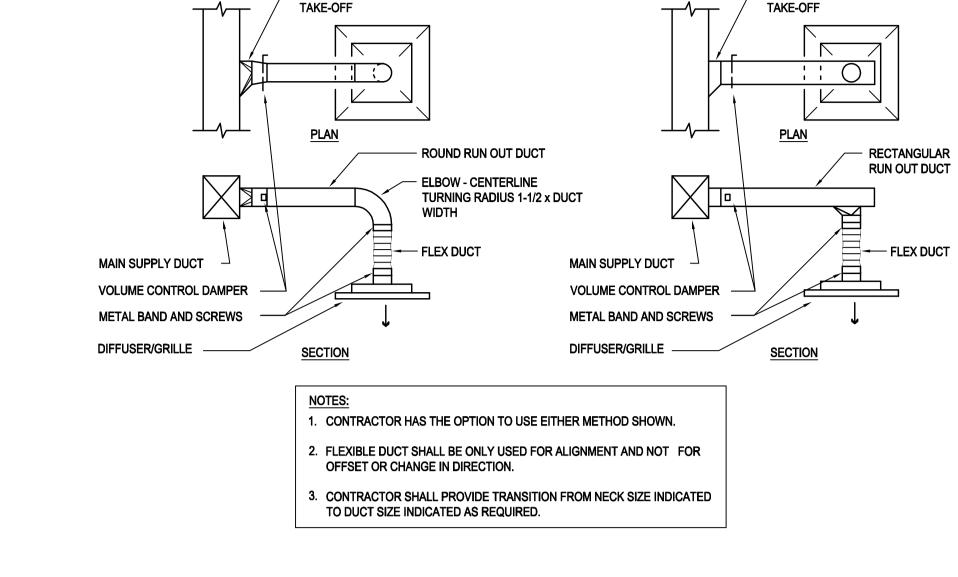
6. ON SUPPLY THROWS, FIRST THROW VALUE IS 150 FPM TERMINAL VELOCITY. SECOND THROW VALUE IS 50 FPM TERMINAL VELOCITY.

- 1. SUSPENDED ABOVE CEILING, COORDINATE OUTDOOR LOUVER INSTALLATION AND PROVIDE INSULATION, DRAIN PIPING, FROST CONTROL AND TIE INTO BUILDING CONTROLS.
- 2. PROVIDE PREMIUM EFFICIENCY MOTORS.

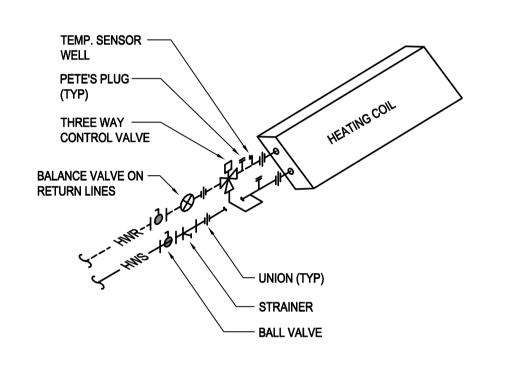
Date



LOOP SEAL FOR COIL CONDENSATE NO SCALE

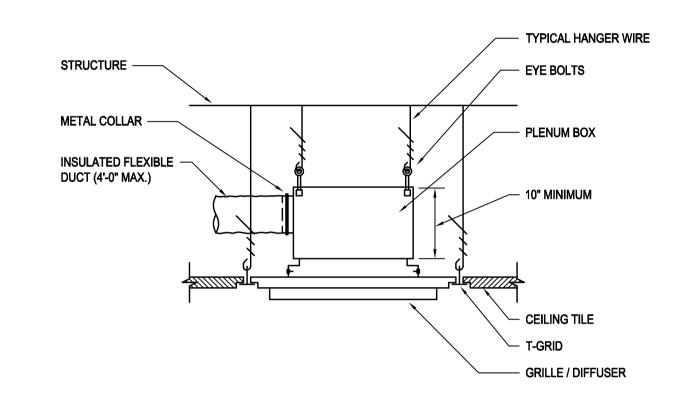


SUPPLY DUCT TAKE-OFF DETAIL

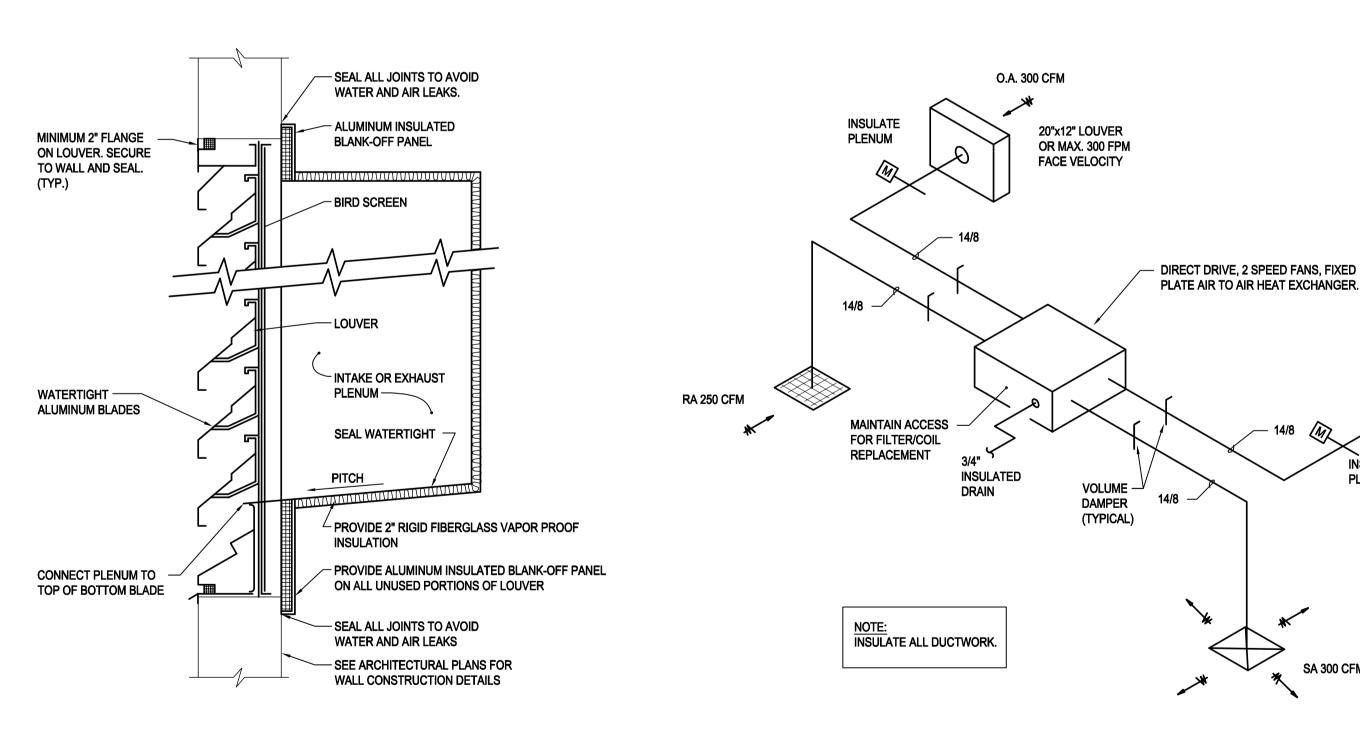


FAN COIL UNIT 3-WAY CONTROL VALVE DETAIL (FCU-8)

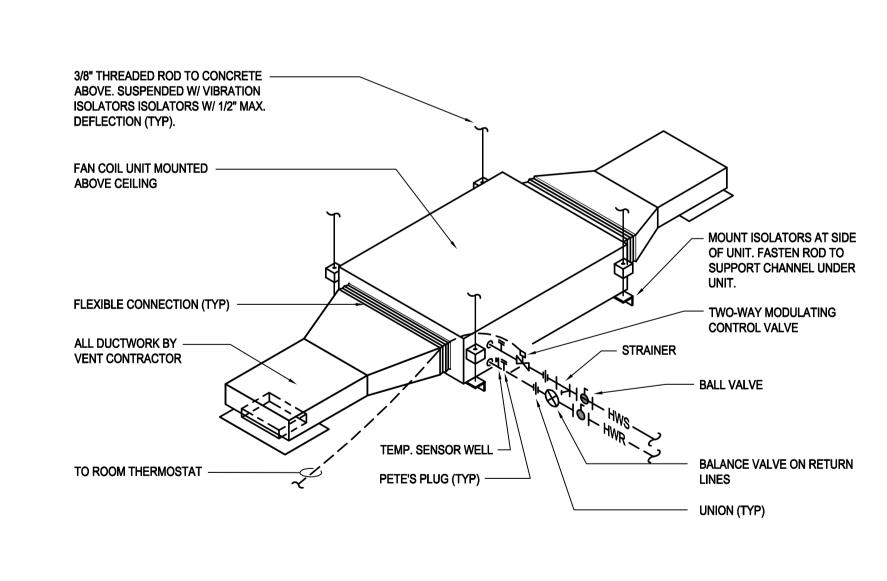
DIRECT DRIVE, 2 SPEED FANS, FIXED



DIFFUSER PLENUM DETAIL NO SCALE



ENERGY RECOVERY VENTILATOR (ERV) DETAIL



FAN COIL UNIT - HORIZONTAL, DUCTED (2-PIPE HW)

Dept. of Veterans Affairs Medical Center 2500 Overlook Terrace Madison, WI, 53750



LOUVER DETAIL

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Website: http://www.henneman.com
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PROJECT LEADER/ARCHITECT: ASHLAND, WI 211 6TH STREET WEST ASHLAND, WI, 54806 PHONE: (715) 682-6004 FAX: (715) 682-6025 933 N. MAYFAIR RD., SUITE 109 MILWAUKEE, WI, 53226

PHONE: (414) 258-6004 FAX: (414) 258-6154

EA 250 CFM

20"x12" LOUVER

OR MAX. 300 FPM

FACE VELOCITY

Drawing Title Project Title Mechanical Schedules and Details Corridor Approved: Project Director Madison, Wisconsin

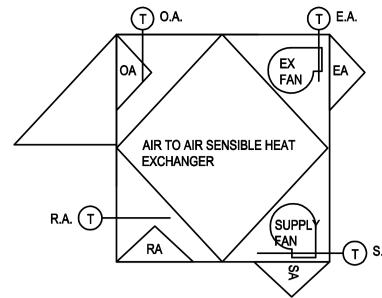
100% CONSTRUCTION DOCUMENTS Project Number Patient Entrance Canopy/ 607-CSI-103 Mental Health Connecting Building Number Drawing Number M301 Checked By: Drawn By: April 12, 2012 HEI HEI

Office of **Facilities** Management

VA FORM 08-6231, OCT 1978

Revisions:

Department of Veterans Affairs Department of



DOINTS LIST

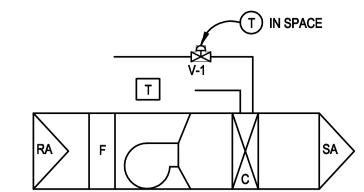
POINTS LIST														$\stackrel{\checkmark}{-}$																			_
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NOTES: 1. ALL HARDWARE AND ALARM POINTS SHALL BE REPRESENTED ON THE GRAPHICS DISPLAY 2. ALL APPLICATION PROGRAMS SHALL BE FULLY FUNCTIONAL USING DATA APPLICABLE TO THIS PROJECT. 3. SIGNAL FROM ONE SENSOR MAY BE SHARED AMONG SEVERAL UNITS.	AUTO SWITCH	J.	CURRENT SENSING SWITCH	PERATURE	A LUKE	DIFFERENTIAL PRESSURE ENTERING WATER TEMPERATURE	LEAVING WATER TEMPERATURE	SET POINT ADJUSTMENT					щ.	<u> </u>	NOIL			HIGH TEMPERATURE (DISCHARGE)	LOW LEMPERATURE (DISCHARGE)	DEN	CLOSE	START		SMOKE/FIRE (DISCHARGE, RETURN)	SCHEDULED START/STOP	OPTIMUM START/STOP	ECORD	ANALYSIS	MAINTENANCE MANAGEMENT	FAILURE MODE RECORD			
EQUIPMENT DESCRIPTION: ENERGY RECOVERY UNIT	HAND/OFF/AUTO	START / STOP	CURRENTS	ROOM TEMPERATURE	AIK IEMPEKAIUKE	DIFFERENT ENTERING \	LEAVING W	SET POINT					OPEN/CLOSE	TIMED DELAY	VAI VE POSITION			HIGH TEMP	LOW LEMPERATION DEFORTING	FAII LIRE TO OPEN	FAILURE TO CLOSE	FAILURE TO START	FREEZE	SMOKE/FIRI	SCHEDULE	OPTIMUM S	RUN TIME RECORD	TREND LOG ANALYSIS	MAINTENAN	FAILURE MC			
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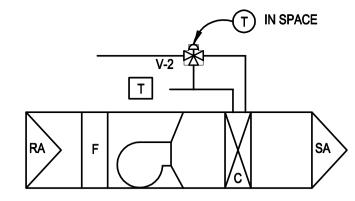
SEQUENCE OF OPERATION

NO SCALE

- 1. THE ERV UNIT IS PRE-WIRED SO THAT ON A SIGNAL FROM THE DDC SUPPLY FAN, EXHAUST FAN, ARE ENERGIZED. THE MOTORIZED OUTDOOR AIR DAMPER AND MOTORIZED
- EXHAUST DAMPER ARE OPEN. 2. THE UNIT SHALL OPERATE TO MAINTAIN A THERMOSTAT SETPOINT (ORIGINAL SETPOINT IS 80 °F FOR SUMMER AND 68 °F FOR WINTER).
- 3. THE UNIT SHALL OPERATE DURING THE SUMMER ONLY IF THE OUTDOOR AIR TEMPERATURE IS LESS THAN THE SUMMER SETPOINT (ORIGINAL SETPOINT OF 80 F). 4. WHEN THE OUTSIDE AIR TEMPERATURE IS BELOW 23 °F, THE UNITS FROST CONTROL SHALL BE ENERGIZED. THE FROST CONTROL WILL SHUT DOWN THE SUPPLY FAN AND
- CLOSE THE INTERNAL DAMPER BASED ON A TIME SCHEDULE TO DEFROST THE UNIT. 5. WHEN THE UNIT SHUTS OFF THE OUTDOOR AIR AND EXHAUST AIR DAMPERS SHALL CLOSE TO ELIMINATE THE MIGRATION OF UNWANTED OUTDOOR AIR INTO THE LINK.
- 6. EACH FILTER BANK (OUTDOOR AIR AND EXHAUST AIR) SHALL BE MONITORED BY A DIFFERENTIAL PRESSURE GAUGE ACROSS THE FILTER BANK. 7. UNIT SHALL OPERATE AT LOW FAN SPEED. ON A RISE IN SPACE TEMPERATURE ABOVE 80 °F, UNIT FAN SPEED SHALL SWITCH TO HIGH SPEED.

SEQUENCE OF CONTROL FOR ERV





POINTS LIST

OCCUPANCY SCHEDULE:											HA	RDW	ARE		1)										SOF	TWA	RE									
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TEMPERATURE SENSOR			١,	•														T			十		•									1	•				
TEMPERATURE CONTROL VALVE			\top												1			١.			\dashv							\top	\top					\top			

SEQUENCE OF OPERATION

1. PROVIDE A SPACE SENSOR THERMOSTAT FOR EACH UNIT. ON A DROP IN SPACE TEMPERATURE BELOW SETPOINT,

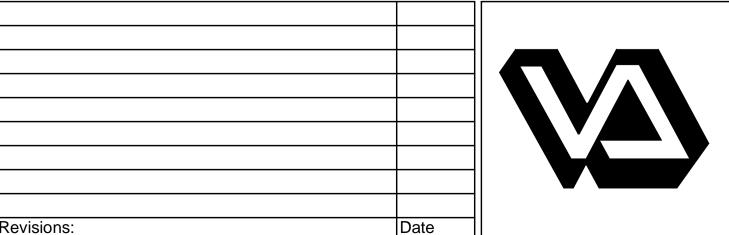
ELECTRIC TEMPERATURE CONTROL VALVE SHALL MODULATE OPEN.

2. A STRAP-ON ELECTRIC THERMOSTAT, LOCATED ON THE HWR PIPE, SHALL CYCLE THE FAN ON WHENEVER HWR

3.THE SET POINT SHALL CHANGE BASED ON A DAY/NIGHT CYCLE. THE TIME OF DAY AND DAY OF WEEK SHALL BE FROM THE GLOBAL SHARED DATA IN THE DDC SYSTEM PART OF THE MENTAL HEALTH CENTER BUILDING.

4. A THREE-WAY CONTROL VALVE SHALL BE LOCATED ON FINAL FAN COIL UNIT #8.





VA FORM 08-6231, OCT 1978

Dept. of Veterans Affairs Medical Center 2500 Overlook Terrace Madison, WI, 53750





CHEQUAMEGON BAY ENGINEERING, INC. MILWAUKEE, WI

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Drawing Title

Mechanical Controls Approved: Project Director

100% CONSTRUCTION DOCUMENTS Project Title Project Number Patient Entrance Canopy/ Mental Health Connecting Corridor 607-CSI-103 Building Number Drawing Number Madison, Wisconsin Checked By: Drawn By:

HEI

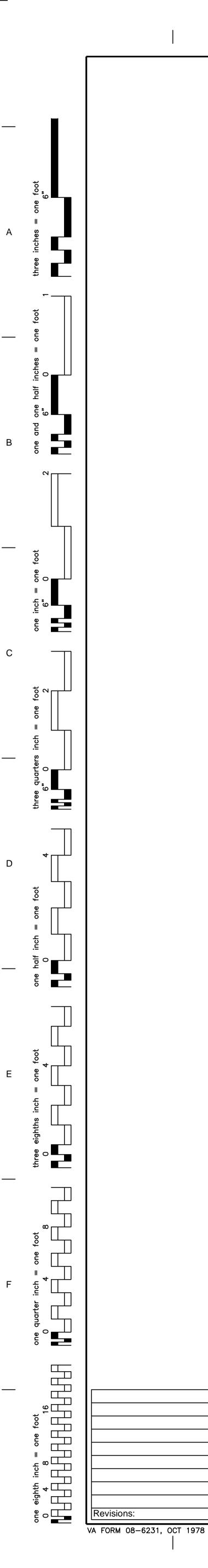
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April 12, 2012

Office of **Facilities** Management

Department of Veterans Affairs

M401



GENERAL ELECTRICAL DEMOLITION REQUIREMENTS:

- 1. ELECTRICAL CONTRACTOR SHALL VERIFY THE EXISTING CONDITIONS AT THE PROJECT SITE BEFORE SUBMITTING COST PROPOSAL.
- 2. THE ELECTRICAL CONTRACTOR SHALL VISIT THE SITE TO VERIFY DEVICES NOT SHOWN. ALL DEVICES NEED TO BE REMOVED IN THE DEMOLITION AREA UNLESS NOTED ON THE DRAWINGS.
- 3. IT IS MANDATORY THAT THE EXISTING BUILDING REMAIN IN CONTINUOUS AND NON-INTERRUPTED OPERATION DURING REMODELING/ALTERING. SERVICES TO EXISTING BUILDING SHALL BE KEPT ON CONTINUOUS OPERATION INCLUDING POWER, LIGHTING, TELEPHONE, FIRE ALARM, ETC. ANY ABSOLUTELY NECESSARY INTERRUPTION OF THESE SERVICES TO ACCOMPLISH PROJECT CONSTRUCTION, SHALL BE HELD TO A MINIMUM AND ARRANGED WITH THE OWNER THROUGH THE GENERAL CONTRACTOR TWO (2) WEEKS IN ADVANCE. TEMPORARY SERVICES SHALL BE FURNISHED AND INSTALLED WHERE NECESSARY TO ACCOMPLISH THIS PURPOSE. TEMPORARIES SHALL BE REMOVED ONLY AFTER NEW PERMANENT SERVICES ARE INSTALLED AND FULLY OPERATIONAL. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR HIS OWN DEMOLITION, REMOVAL, CAPPING, STORING, ABANDONING, DISCONNECTING, RELOCATING AND RECONNECTION OF EXISTING ELECTRICAL EQUIPMENT AND MATERIAL. ALL CUTTING, PATCHING, REPAIRING, REPLACEMENT AND REFINISHING, SHALL MATCH THE EXISTING CONSTRUCTION AS NEARLY AS POSSIBLE.
- 4. ELECTRICAL CONTRACTOR SHALL REFER TO ARCHITECTURAL DRAWINGS TO FAMILIARIZE HIMSELF WITH EXTENT OF ALTERATION/REMODELING WORK AND MORE SPECIFICALLY NOTE WHERE NEW PARTITIONING IS BEING INSTALLED, WHERE EXISTING PARTITIONING IS BEING REMOVED, WHERE CEILINGS ARE BEING REMOVED AND OR REPLACED, ETC.
- 5. THE OWNER SHALL HAVE THE FIRST CHOICE TO ACCEPT EXISTING DEVICES BEING REMOVED.

GENERAL NOTES:

- 1.) ALL BRANCH CIRCUITS SHALL HAVE GROUND CONDUCTORS.
- 2.) THE ELECTRICAL CONTRACTOR SHALL PROVIDE, IF REQUIRED, ADJUSTMENTS (±) 6'-0" IN THE LOCATION OF ALL SYSTEM DEVICES, FIXTURES, OUTLETS, PANELS, ETC. IN ORDER TO EXPEDITE THE ELECTRICAL WORK. THE POSITION OF ALL WORK AS SHOWN IS INTENDED TO BE FIXED AND IN THE PROPER LOCATION. SUCH REQUIRED ADJUSTMENT SHALL BE DETERMINED BY THE A/E.
- 3.) SMOKE DETECTORS SHALL BE MOUNTED A MINIMUM OF 3'-0" FROM EACH AIR SUPPLY DIFFUSER.
- 4.) PROVIDE SEPARATE NEUTRAL FOR EACH BRANCH CIRCUIT PHASE CONDUCTOR. FOR CLARITY NOT ALL NEUTRALS SHOWN ON BRANCH CIRCUIT CONDUIT ROUTING.
- 5.) SEE ARCHITECTURAL SHEETS FOR EXACT LOCATION OF DEVICES. DEVICES SHOWN ON ARCHITECTURAL ELEVATIONS. COORDINATE LOCATION OF DEVICES WITH ARCHITECT'S FIELD PERSON TO ENSURE PROPER LOCATION AND HEIGHT.
- 6.) WHERE NEW DEVICES ARE SHOWN THE ELECTRICAL CONTRACTOR SHALL DO ALL CUTTING. THE GENERAL CONTRACTOR SHALL DO ALL PATCHING AND PAINTING OF EXISTING WALLS. THE ELECTRICAL CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH EXISTING WALL CONSTRUCTION. WHERE POSSIBLE ELECTRICAL CONTRACTOR MAY USE EXISTING BRANCH CIRCUIT CONDUIT BUT NEW CIRCUIT WIRING WILL NEED TO BE PULLED.

ELECTRICAL ABBREVIATIONS

			7110110
AFF	ABOVE FINISHED FLOOR	MLO	MAIN LUGS ONLY
С	CONDUIT	MSO	MERITER STANDARD OUTL
СВ	CIRCUIT BREAKER	MTR	MOTOR
CU	COPPER	NIC	NOT IN CONTRACT
EC	ELECTRICAL CONTRACTOR	NL	NIGHT LIGHT
ELEC	ELECTRIC, ELECTRICAL	NTS	NOT TO SCALE
EM	EMERGENCY	OAH	OVERALL HEIGHT
EMT	ELECTRICAL METALLIC TUBING	O.C.	ON CENTER
ETR	EXISTING TO REMAIN	PC	PHOTO CELL
EWC	ELECTRIC WATER COOLER	PNL	PANEL
EX	EXISTING	PR	PAIR
FLR	FLOOR	PVC	POLYVINYL CHLORIDE
GFCI	GROUND FAULT CIRCUIT INTERRUPTER	RE	REMOVE
GRS	GALVANIZED RIGID STEEL	REL	RELOCATE
HOA	HAND-OFF-AUTOMATIC SWITCH	SP	SPARE
HP	HORSEPOWER	TEL	TELEPHONE
IMC	INTERMEDIATE METALLIC CONDUIT	TC	TIME CLOCK
JB	JUNCTION BOX	TV	TELEVISION
MCC	MOTOR CONTROL CENTER	TYP	TYPICAL
MIN	MINIMUM	UH	UNIT HEATER
CPU	COMPUTER CPU	VFD	VARIABLE FREQUENCY DR
DVR	DIGITAL VIDEO RECORDER	WP	WEATHERPROOF

MOUNTING HEIGHTS OF ELECTRICAL DEVICES

UC

UNDERCOUNTER

REFRIGERATOR

"UP" MEANS UP FROM FINISHED FLOOR TO CENTERLINE OF DEVICE

COMP COMPUTER

	MEANS DOWN FROM FINISHED CEILING TO CENTER	
1.	WALL SWITCHES	UP 42"
2.	*RECEPTACLES	UP 18"
3.	TT SWITCHES	UP 42"
4.	*DESK TELEPHONE OUTLETS	UP 18"
5.	WALL TELEPHONE OUTLETS	UP 50"
6.	DISCONNECT SWITCHES	UP 66"
7.	CLOCK OUTLETS	UP 90"
8.	FIRE ALARM HORNS / STROBES	UP 80" OR 6" BELOW CEILIN
9.	FIRE ALARM BREAK GLASS STATIONS	UP 42"
10.	PUSH-BUTTON STATIONS	UP 42"
11.	PANELS TOP @	72" (TOP)
12.	COMPUTER OUTLETS	UP 18"
13.	INTERCOM OUTLETS	UP 42"
14.	SECURITY CAMERA OUTLETS	DN 12"
15.	CARD ACCESS OUTLETS	UP 42"
16.	VISUAL FIRE ALARM STROBE	UP 80"
17.	HAND DRYERS	UP 42"

*A. THE EXACT MOUNTING HEIGHT REQUIRED FOR THESE DEVICES SHALL BE COORDINATED BY THE ELECTRICAL CONTRACTOR.

B. ALL DEVICE MOUNTING HEIGHTS SHALL MEET ALL ACCESSIBILITY STANDARDS.

	LIGHTING FIXTURES
SYMBOL	DESCRIPTION
F1 — 23 — a,b —	— FIXTURE TYPE — CIRCUIT — CONTROL DEVICE: FIRST LETTER CONNECTED TO CENTER LAMP(S), SECOND LETTER CONNECTED TO OUTBOARD LAMPS (UNLESS NOTED OTHERWISE)
	RECESSED MOUNTED FLUORESCENT TROFFER, NORMAL POWER
	RECESSED MOUNTED FLUORESCENT TROFFER, CRITICAL POWER
⊗ ∀	EXIT SIGN - FACES AND ARROWS AS SHOWN
os	OCCUPANCY SENSOR - CEILING MOUNTED
PC	INTERIOR PHOTOCELL / DAYLIGHTING SENSOR - CEILING MOUNTED

	RECEPTACLES
SYMBOL	DESCRIPTION
₩	DUPLEX RECEPTACLE

	POWER SYSTEMS
SYMBOL	DESCRIPTION
1	BRANCH PANEL WITH DESIGNATION
\Diamond	MOTOR WITH DESIGNATION, SEE MOTOR SCHEDULE
<u> </u>	JUNCTION BOX

	FIRE ALARM SYSTEM
SYMBOL	DESCRIPTION
Fρ	MANUAL PULL STATION
Fs	SMOKE DETECTOR
F⊙s	COMBINATION AUDIBLE (SPEAKER) /VISUAL ALARM - CEILING MOUNTED; 15 CANDELA

	TELECOMMUNICATIONS SYSTEMS
SYMBOL	DESCRIPTION
▼ W	TELEPHONE OUTLET, W= WALL MOUNTED 54" AFF

	SECURITY SYSTEMS
SYMBOL	DESCRIPTION
	CAMERA - FIXED
(e)	DOOR DETAIL IDENTIFICATION - SEE SHEET E301
(CR	CARD READER

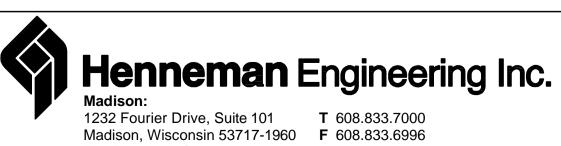
	AUDIO/VISUAL SYSTEMS								
SYN	MBOL	DESCRIPTION							
<	∲s	PAGING SYSTEM LOUDSPEAKER, CEILING MOUNTED							

LIGHTNING PROTECTION								
SYMBOL	DESCRIPTION							
⊗ AT	AIR TERMINAL - ROOF MOUNTED							

Dept. of Veterans Affairs Medical Center 2500 Overlook Terrace Madison, WI, 53750

Date







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Drawing Title Electrical Notes, Symbols and Abbreviations

Approved: Project Director

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Project Number 607-CSI-103 Office of Building Number **Facilities** Management Drawing Number

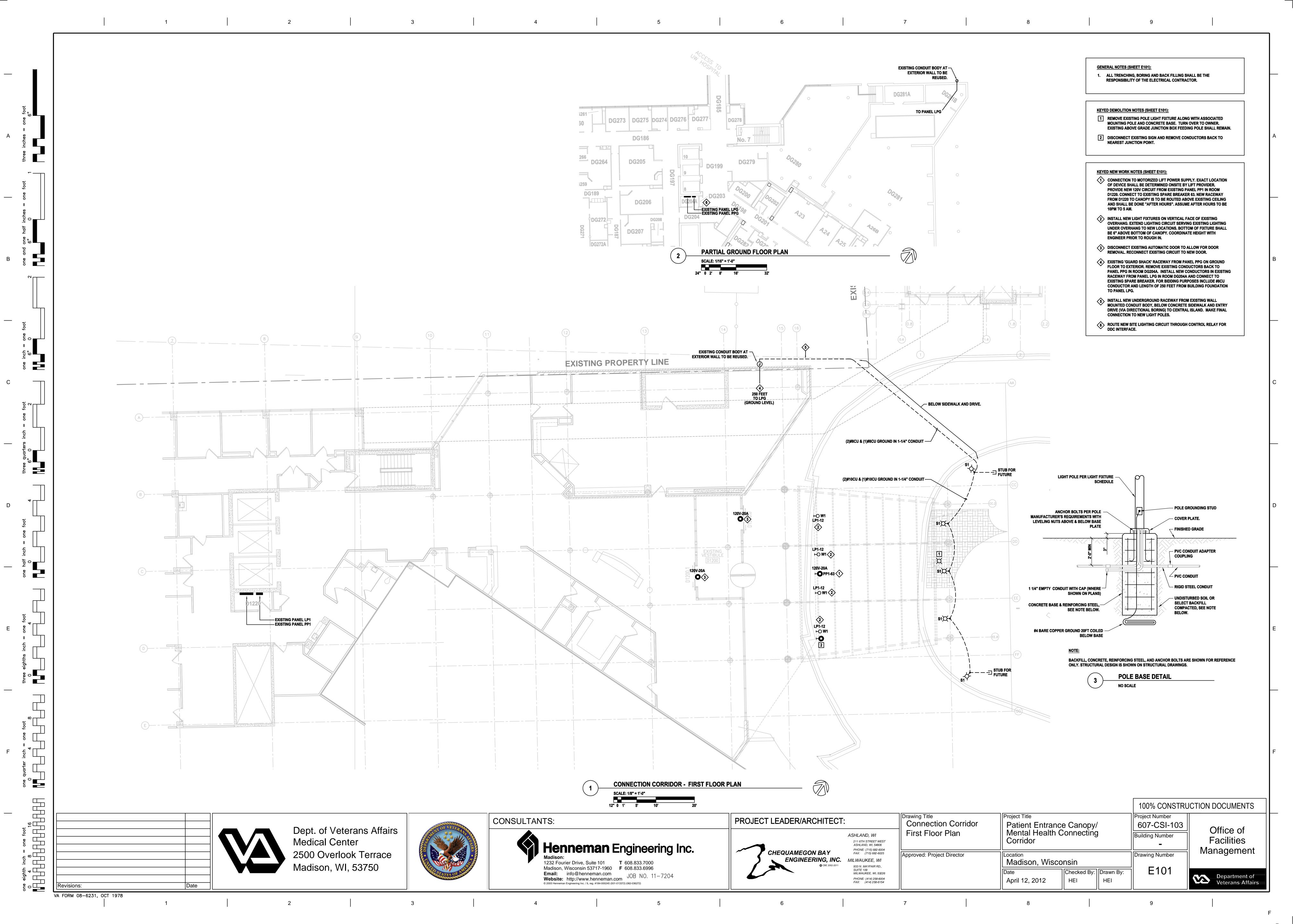
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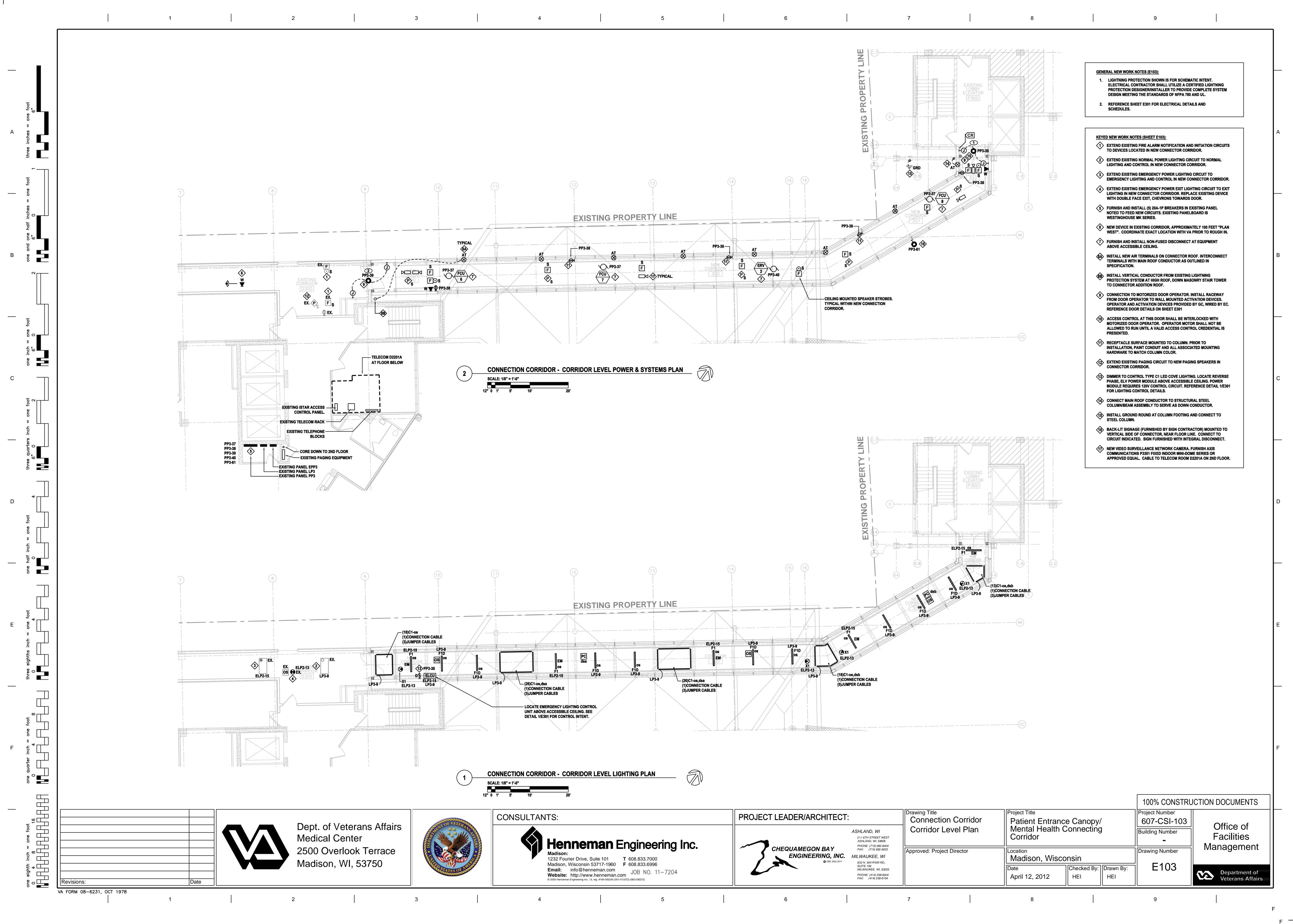
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Madison, Wisconsin Checked By: Drawn By: April 12, 2012 HEI HEI





DISCONNECT SWITCH AND STARTER SCHEDULE DISC STAR- VOLTS PHASE HP VA AMPS SW FUSE NEMA STR NEMA CONTROL **CONDUIT & WIRE** 2#12, 1#12,GRD, 3/4"C 2#12, 1#12,GRD, 3/4"C 2#12, 1#12,GRD, 3/4"C 0.1 EC - 120 1 2@1/4 1,392 11.6 20.0 NA 1.0 MAN 2#12, 1#12,GRD, 3/4"C

*ELECTRICAL CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH CONTRACTOR SUPPLYING EQUIPMENT PRIOR TO ALL TRADES ORDERING EQUIPMENT TO ENSURE THE PROPER SELECTION AND COST IMPLICATIONS OF EQUIPMENT SELECTION. COSTS INCURRED DUE TO CHANGES SHALL BE DEFERRED TO THE TRADE SUPPLYING THE EQUIPMENT.

OCCUPANCY SENSOR SCHEDULE

ENERAL NOTE: REFER TO DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION REGARDING OCCUPANCY SENSORS, ACCESSORIES, INSTALLATION AND COMMISSSIONING REQUIREMENTS. PROVIDE OPTIONS AND ACCESSORIES INDICATED. MANUFACTURERS NAMES AND MODEL NUMBERS INDICATE REQUIRED QUALITY AND PERFORMANCE. THE CONTRACTOR MAY PROPOSE PRODUCTS OF EQUAL OR BETTER QUALITY AND PERFORMANCE. FINAL SENSOR QUANTITIES AND LOCATIONS WILL BE BASED UPON MANUFACTURER'S SPECIFIC PRODUCT LAYOUT DRAWINGS. THE CONTRACTOR SHALL PROVIDE DETAILED SHOP DRAWINGS OF SENSORS AND ASSOCIATED WIRING DEVICES SUCH AS POWER PACKS, TRANSFORMERS, LIGHT SWITCHES, DIMMERS, LOW VOLTAGE LIGHTING CONTROLS AND REMOTE TRANSFER (UL924) RELAYS SPECIFCIC FOR THIS PROJECT. SHOP DRAWINGS SHALL BE FOR SPECIFIC ROOMS AND SHALL INCLUDE DEVICE LAYOUTS, ACCESSORY LAYOUTS, AND WIRING DIAGRAMS. PROVIDE COMMISSIONING PER DOCUMENTS. PROVIDE A MINIMUM OF FOUR (4) FEET OF EXTRA CABLE AT EACH SENSOR TO ALLOW FOR FIELD ADUSTMENTS TO LOCATIONS.

	MO	UNTING	AREA OF COVERAGE, APPLICATIONS			TECHNOLOGY					MANUFACTURER SERIES					
							PASSIVE				LIGHT LEVEL			HUBBELL BLDG		
TYPE	WALL	CEILING	225 SQ. FT.	1000 SQ. FT.	2000 SQ. FT.	CORRIDOR 90 linear ft.	INFRARED	ULTRASONIC	ACCOUSTIC	DUAL TECH	SENSOR	LEVITON	WATT-STOPPER	AUTOMATION	OTHER	NOTES
os	707.==	X				X		X			NO	EQUAL	W-200H	EQUAL		
PC		X									YES		LS-102			

<u>LIGHTING CONTROL NOTES:</u> CALIBRATION OF THE OCCUPANCY AND DAYLIGHT SENSORS SHALL BE PERFORMED BY THE ELECTRICAL CONTRACTOR.

RECALIBRATING IS EXPECTED TO BE PERFORMED BY THE ELECTRICAL CONTRACTOR AT 3 MONTHS AND 6 MONTHS AFTER PROJECT CLOSE OUT. RETURN VISITS SHALL BE BID ACCORDINGLY.

CALIBRATION OF THE DAYLIGHT SENSORS WILL REQUIRE ADJUSTMENTS DURING NORMAL DAYTIME LIGHTING CONDITIONS AND DURING NO DAYLIGHT CONTRIBUTION (NIGHT TIME). ELECTRICAL CONTRACTOR SHALL BID MULTIPLE CALIBRATION ACCORDINGLY.

MANUAL DAYLIGHT SENSOR CALIBRATION SHALL BE DONE IN CONJUNCTION WITH A HANDHELD ILLUMANCE METER FURNISHED BY ELECTRICAL CONTRACTOR. AUTO-CALIBRATION FEATURES FURNISHED WITH SOME DAYLIGHT SENSORS IS PERMITTED TO BE USED AS A STARTING POINT HOWEVER MANUAL CALIBRATION AT PREVIOUSLY MENTIONED TIME FRAMES IS REQUIRED.

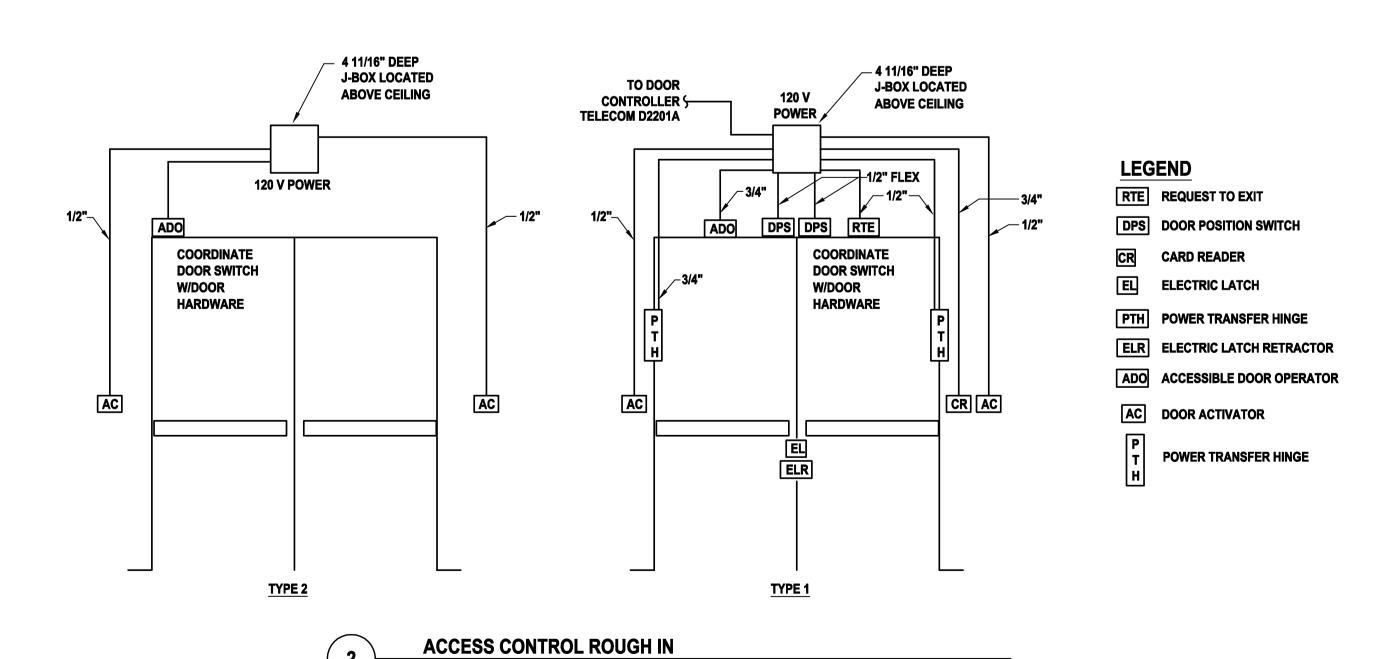
SENSOR SHALL CONTINUOUSLY MEASURE SPACE FOR TARGET LIGHT LEVEL AND ADJUST ELECTRIC LIGHTS ACCORDINGLY.

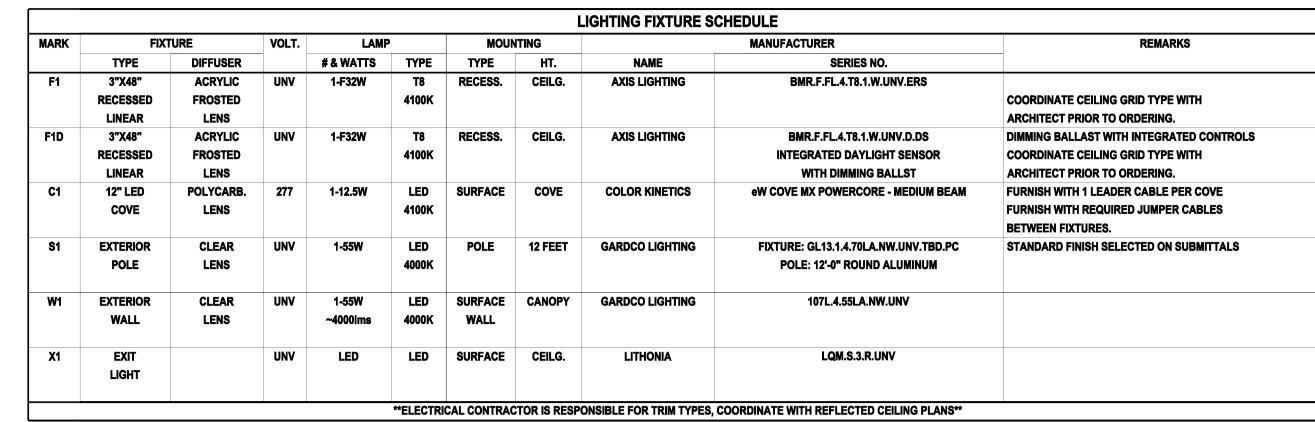
ILLUMINANCE LEVELS INDICATED IN SEQUENCE OF OPERATION ARE INTENDED TO BE ACTUAL MEASURED ILLUMINANCE LEVEL AND MAY NOT CORRESPOND WITH THE SETPOINT VALUE ON DEVICE. ADJUST SETPOINT AS REQUIRED TO CORRESPOND WITH SPECIFIED LEVEL. STAND ALONE SWITCHING DAYLIGHT SENSOR SEQUENCE OF OPERATION:

- WHEN THE ILLUMINANCE LEVEL RISES ABOVE THE SENSOR'S OFF SETPOINT (30FC) THE ELECTRIC LIGHTS SHALL TURN OFF.
- WHEN THE ILLUMINANCE LEVEL FALLS BELOW THE SENSOR'S ON SETPOINT (15FC) THE ELECTRIC LIGHTS SHALL TURN ON.
- WHEN THE ILLUMINANCE LEVEL FALLS WITHIN THE DEAD BAND RANGE (ILLUMINANCE RANGE BETWEEN ON AND OFF SETPOINTS) THE ELECTRIC LIGHTS SHALL REMAIN IN THEIR CURRENT STATE UNTIL THE ON OR OFF SETPOINT IS REACHED.

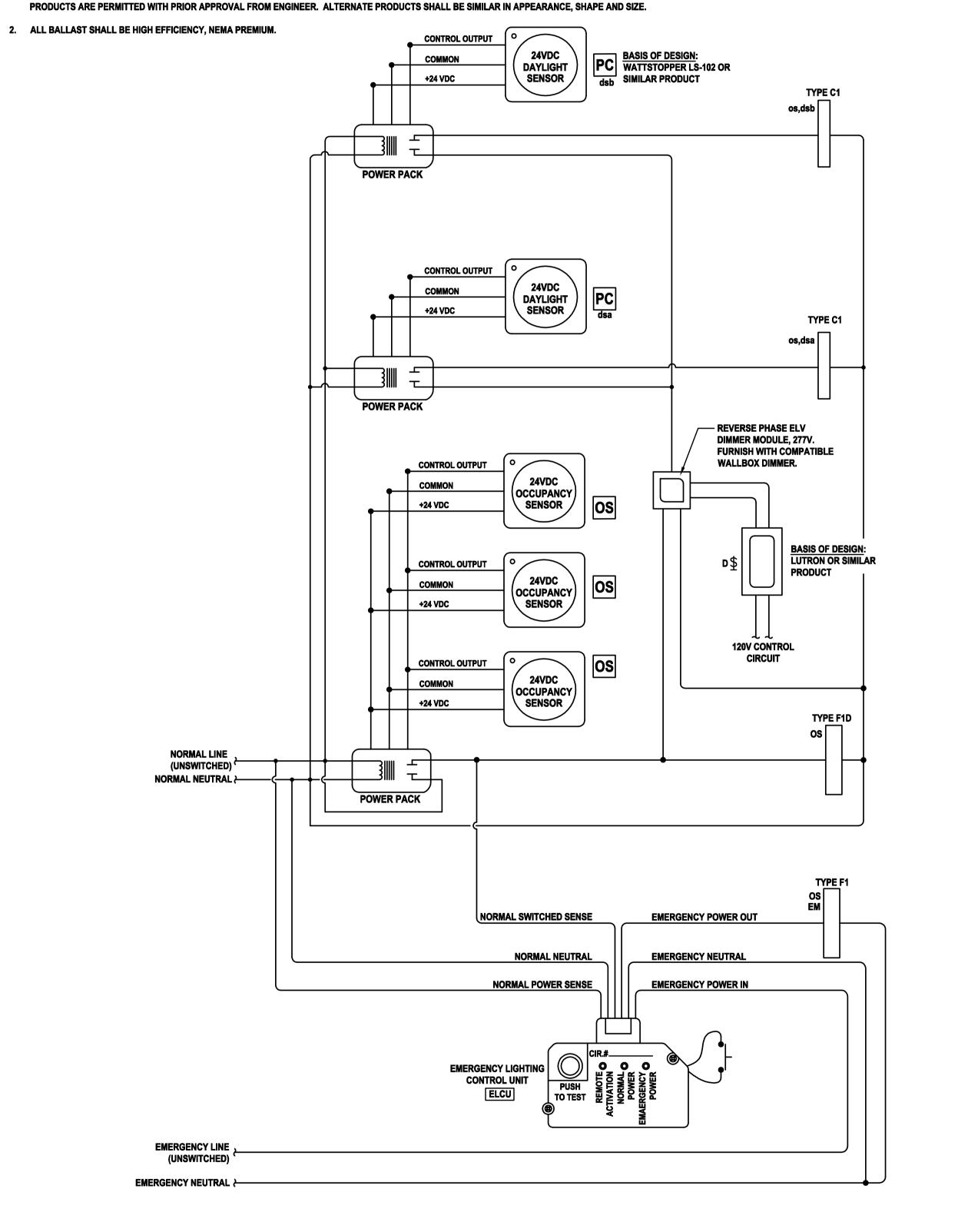
FIXTURE INTEGRATED CONTINUOUS DIMMING DAYLIGHT SENSOR SEQUENCE OF OPERATION:

- TARGET ILLUMINANCE LEVEL IS 15-20FC.
- WHEN THE ILLUMINANCE LEVEL RISES ABOVE THE TARGET LEVEL THE ELECTRIC LIGHTS SHALL REDUCE LUMEN OUTPUT ACCORDINGLY TO MAINTAIN TARGET LEVEL. ILLUMINANCE LEVEL ABOVE 20FC SHALL REDUCE ELECTRIC LIGHTING TO MINIMUM OUTPUT.
- WHEN THE ILLUMINANCE LEVEL FALLS BELOW THE TARGET LEVEL THE ELECTRIC LIGHTS SHALL INCREASE LUMEN OUTPUT ACCORDINGLY TO MAINTAIN TARGET LEVEL.





1. MANUFACTURERS AND PRODUCTS LISTED ARE BASIS OF DESIGN REFERENCE. ALTERNATE MANUFACTURERS AND PRODUCTS WHICH MEET OR EXCEED THE PROPERTIES OF THE REFERENCE



CONNECTOR CORRIDOR CONTROL SCHEMATIC

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Electrical Schedules and Project Title Patient Entrance Canopy/ Mental Health Connecting Details Corridor Approved: Project Director Madison, Wisconsin

100% CONSTRUCTION DOCUMENTS Project Number 607-CSI-103 Office of Building Number **Facilities** Management Drawing Number E301

Department of Veterans Affairs

Date Revisions: VA FORM 08-6231, OCT 1978

Medical Center

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Checked By: Drawn By: April 12, 2012 HEI HEI